

LA GARDE (L.A.)

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SURGEON GENERAL'S OFFICE.

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The attention of medical officers is called to the following papers, read at the School for Medical Officers, held at the South Armory on Thursday, the twenty-sixth of March, 1896, authorized by Paragraph II., General Order No. 8, current series.

(1)

THE MEDICAL DEPARTMENT IN TIME OF WAR.

By Capt. Louis A. La Garde, Assistant Surgeon, United States Army.

GENTLEMEN : — Upon the invitation of your surgeon general I have prepared some notes which relate to the medical department of the United States army in the time of war. At a time when the State troops would be called to co-operate with the regular army your regulations would not differ from ours, and what I have to say in this instance will apply to us alike.

My remarks will relate (1) to the method of organizing the medical department on a war basis; (2) I shall take up the question of our present allowance of sanitary soldiers, medical officers, etc.; (3) I shall direct my remarks to the question of the necessity for an increase in the number of helpers to the wounded, which seems apparent with the use of the new military rifle.

1. *Field Organization.* — In taking the field the medical officers and members of the hospital corps serving with troops in different parts of our country proceed with their respective commands, as a rule, to a point of rendezvous or base of operations. The medical officers are assigned by the chief surgeon, under the orders of the general commanding, to the various duties involved in the administrative and executive branches of the medical department.

The members of the hospital corps are likewise organized into two branches, viz., the one for duty in the field hospitals proper as cooks, nurses, clerks, apothecaries, etc., and the other as drivers to ambulances, as porters in collecting and removing the sick and wounded, and rendering first aid thereto.

The necessary tentage, instruments and equipment are carried in part by the various detachments arriving at the base of operations, and they are furnished in part by timely requisitions on the medical supply depots, of which we have three principal ones at present, viz., at New York, St. Louis and San Francisco.

We have no specially defined plan to be followed in case of hostilities; yet medical officers are pretty well agreed that a system could be evolved from our present regulations as soon as the troops were made to assemble. Our regulations are sufficiently exact to suggest,

SURGEON GENERAL'S OFFICE

NOV. 6-1903

731.

as it were, the remedy of such lapses as may be apparent with the occurrence of each emergency.

2. *Present Allowance of Sanitary Soldiers and Medical Officers.* — Our regulations provide that in time of war the privates of the hospital corps shall form two per cent. of the strength of the command; and that one acting steward to every ten privates of the corps and one full steward to every thirty of the privates shall form the standard upon which to base the number of helpers to the sick and wounded. The number of medical officers with troops in the field is on an average of three to each regiment, although this number is by no means constant, and it is possible, at times, to get along with much less, while certain emergencies are likely to arise when two or three times that number might be required.

This being the allowance of medical officers and members of the hospital corps we see at once that when the troops are massed, the organization changes, with the arrival of the troops, to first, the regimental; second, the brigade; and third, the division hospital. In other words, the medical department, including the hospital corps, organizes *pari passu* with the organization of the troops.

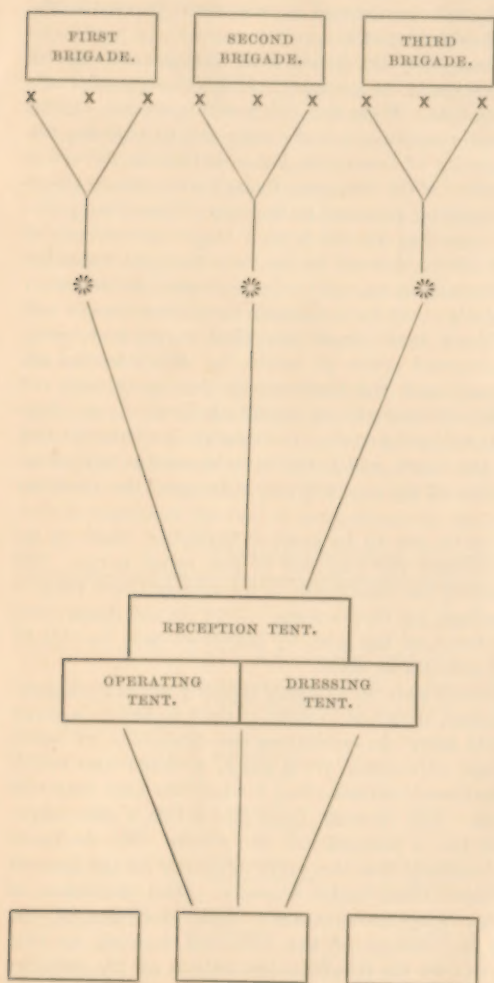
In addition to this force of the hospital corps and medical officers, our regulations provide an auxiliary force among the privates of the fighting line. These are known as litter bearers. Formerly they numbered four to each company, and they were taught the duties of first aid to the injured by the medical officers. It was their duty to assist the wounded in the fighting line until relieved by the members of the hospital corps proper. Very recently this scheme has been enlarged by orders from the War Department. The recent orders provide that not only four but all the men of a company shall be taught the duties of first aid to the injured, so that in time of battle any one or more of the men may be designated by the commander to remove the wounded or care for them in other ways. The medical officers are no longer expected to instruct these privates; they are taught the duties of first aid, and are drilled in the handling of the wounded on and off the stretchers, in and out of the ambulances, etc., by the company officers.

The ambulances for the conveyance of the sick are distributed to the army at the rate of three to each regiment of infantry of five hundred men or more, two to each cavalry regiment and one to each battery of artillery. Two ambulances are allowed the headquarters of each army corps, and to each train of ambulances belonging to a division two army wagons are allowed.

This, briefly considered, is the method or organization of the medical department in our army on a war footing.

The work of such an organization is best studied by a diagram, exhibited herewith, which is a modified copy from a recent article by Lieutenant Colonel Forwood, U. S. A. It shows at once the disposition of the relief corps in the different parts of the field.

# Diagrammatic Drawing, showing the Several Lines of Medical Aid on the Field.



**LINE OF BATTLE.**—Regimental surgeons, orderlies, dressing cases, company bearers, first aid packages, stretchers, immediately in rear of fighting line.

**FIRST DRESSING PLACES.**—Ambulance surgeons, pack animals with panniers, surgeons' tents, stewards, cooks and litter bearers of the hospital corps 1,000 yards behind fighting line, near water.

**AMBULANCE STATION.**—Surgeons' hospital corps men, ambulances, medical wagons, tents, operating tables, light cooking apparatus 2,500 yards from fighting line, near water, fuel and dwellings.

**DIVISION FIELD HOSPITAL (3 STATIONS).**—Field folding furniture, bedding, medical supplies, etc., in vicinity of dwellings, water, fuel, large barns, hay, straw.



The topography of the field might be such as to require a considerable degree of variation in this scheme, in so far as the distance between stations is concerned.

This scheme is of course diagrammatic in the extreme. Such a bountiful arrangement as this would hardly ever be witnessed in any battle, but it will serve us as a working model.

3. We now come to consider the question of the *necessity for an increase in the number of helpers to the wounded, which seems apparent with the use of the new military rifle*. With the old arm, experience taught us that the estimates already mentioned were sufficient to care for the wounded in the vast majority of instances, but now that we have discarded the large calibre rifle for the weapon of small bore, whose range and penetration exceed anything yet tried in the way of hand weapons, it is claimed by many writers that we will have a larger percentage of wounded, and that the additional work to be thus imposed upon the relief corps will be far beyond the capacity of our present allotment.

I might state, incidentally, that it is claimed that other causes will operate to impose additional work upon the relief corps, and here I have reference to the extended order of battle, by which troops are spread over more ground, and the increase in the percentage of wounded, which it is said will come from modern field artillery. The brief time at my disposal will not permit a consideration of the subject from the stand-point of the latter, and I will have to confine myself as much as I can to the effects of the new military rifle upon the question at issue.

If the casualties of battle are to be greater hereafter, there is no doubt that we should increase the numbers of our relief corps. We have no means of estimating the deadliness of the new military rifle, — this can only be determined by future wars, — but we can draw some deductions from the statistics of the past, by which we may be able to arrive at conclusions of reasonable value.

A study of these statistics gave us formerly a pretty accurate idea of the percentage of wounded, which we might expect to find in a given battle fought with the old arm. In estimating the casualties of battle heretofore, the percentage of wounds from rifles, carbines and revolvers were especially considered, because they formed the vast majority of all the wounds noted. The wounds from the artillery arm, bayonets and sabres formed but a fraction of the whole. We do know from past experience, therefore, that the great majority of the injured noted in hospitals suffered from bullet wounds. The statistics of various wars show this very prominently. The statistics of the Crimean war give the percentage of the gun-shot wounds by rifle bullets at 60. In the war of the rebellion the nature of the missiles was ascertained in 141,961 cases, and the surgeon general's report says 90.1 per cent. were inflicted by rifle bullets. In the Franco-Prussian war Chenu's statistics gave the percentage of those receiving

bullet wounds among the French at Gravelotte at 80.19. The same author on the part of the German army for the whole of the war shows that 91 per cent. of the wounds were inflicted by rifle bullets. It is thus seen that heretofore the casualties of battle have been especially identified with bullets from hand weapons, and in reckoning upon the casualties and havoc of future wars, I believe that the majority of the writers have special reference to the perfected military rifle-propelling, steel-armored bullets. Those who argue that our present allotment of two per cent. for a relief corps is not sufficient, cite especially the dangers of the new gun in so far as they lie in —

(a) Greater penetration.

(b) Greater dangerous space.

(c) The employment of smokeless powders, which gives a clear field.

We may here state that increased penetration, superior velocity and extended range have ever been the aim of the ballistician, and that the perfected military rifle of to day is the gradual outcome of his genius. For the present let us consider *a* and *b*, and see by a study of past experience what has been the effect of their development upon the casualties of battle.

I should like to call your attention to some data I have copied from a tabulated statement by Longmore in the last edition of his great work on "Gun-shot Injuries." You will see that he gives the percentage of killed and wounded in certain battles, from Blenheim, which was fought in the days of smooth bores, down to the Franco-German war (1870-71), which witnessed the use of a more perfect military gun.

*Percentage of Killed, Wounded, etc.*

BATTLES.	Nation.	Strength.	Killed.	Wounded.	Ratio of Killed and Wounded.
			Percent.	Per cent.	
Blenheim, 1704, . {	British allies, . .	56,000	9.00	14.00	1 to 1.6
	Gallo-Bavarians, . .	60,000	20.00	23.00	1 to 1.1
Italian war, . . . {	French, . . . .	189,690	1.33	10.37	1 to 7.7
Whole war, 1859, . {	Sardinians, . . .	?	—	—	1 to 4.4
	Austrians, . . .	?	—	—	1 to 4.8
Shiloh, 1862, . . {	Unionists, . . .	63,000	2.75	12.51	1 to 4.5
	Confederates, . .	40,000	4.32	20.03	1 to 4.6
Gettysburg, 1863, . {	Unionists, . . .	117,350	2.41	11.68	1 to 4.8
	Confederates, . .	68,352	5.12	21.21	1 to 4.1
Gravelotte, 1870, . {	Germans, . . . .	278,131	1.60	5.46	1 to 3.4
	French, . . . .	125,000	0.09	5.37	1 to 5.8
Sedan, 1870, . . {	Germans, . . . .	190,239	0.86	3.40	1 to 3.9
	French, . . . .	124,000	2.41	11.30	1 to 4.6
Franco-German war,	Whole German army, . . . .	887,876	1.97	10.83	1 to 5.4

A careful comparison of the data in this table shows that the percentage of wounded and the ratio of killed to wounded have diminished rather than increased since the days of Blenheim, and, as these engagements were fought during a period of history coincident with the evolution of the military rifle, or, as we might put it, during a period of history coincident with the development of velocity, range and penetration of the projectiles of military hand weapons, we are forced to the conclusion that the casualties of battle have not kept pace with the improvements in the latter, and that it is very doubtful if an increase in the sanitary or relief corps will be rendered necessary from this source in the future.

The reason for a diminution in the casualties of battle is well understood, and it is not the purpose of this paper to enter into an explanation of it any more than to point out that, as the ballistician has conferred range, penetration, dangerous space, etc., upon his projectile, the tactician has sought to neutralize its deadliness by altering his tactics from a close to an extended order, by avoiding front attacks when flank movements might accomplish the desired end and by resorting to those expedients best known to the military man

(c) *The employment of smokeless powder*, which gives a clear field. In answer to the argument that smokeless powder will operate to increase the percentage of wounded it may be stated that the rifles of small calibre are proverbially inaccurate in the dim and remote ranges, and that for this reason a clear field does not offer any marked advantage. The inaccuracy in fire is said to be due to the hygroscopic property of the nitro compounds which compose the new explosives as well as to their poor keeping qualities, both of which cause varying velocities.

It has been proposed to counteract the use of smokeless powder by generating smoke on the field from explosives, chemical substances, etc., in order to conceal the troops from the fire of the enemy, or for any purpose calculated to give advantage in manœuvring bodies of men. In addition to this the showy uniform and white tentage heretofore in use are to be discarded for materials with shades bearing but little contrast to those of the field. When we consider the resort to such expedients, in connection with the inaccuracy of the new arm, it is doubtful if even smokeless powder will have any influence to increase the casualties of battle, or to alter the present allotment of relief corps.

The character of the wounds inflicted by steel-armored projectiles and our perfect technique in dressing them will have their weight in lessening the work of the sanitary corps in the wars of the future.

Before we proceed to the character of the wound, let us study their regional distribution, as noted in former wars. The subjoined table is one often referred to by writers on gun-shot injuries. It shows that



the regional distribution of wounds was learned in 245,739 instances, and that the different parts of the body suffered as follows:—

*War of Rebellion (exclusive of Killed in Action).*

RECORD OF 245,739 GUN-SHOT WOUNDS.	Number.	Percentage.
Head, face, neck, . . . . .	26,400	10.7
Trunk, . . . . .	45,184	18.4
Upper extremities, . . . . .	87,793	35.7
Lower extremities, . . . . .	86,413	35.1

In addition to the foregoing we have statistics tabulated by Fisher concerning the wounds in the Prussian army in 1870-71, giving the gross results of 61,168 gun-shot injuries, from which it appears that in every 100 men hit 12 per cent. were killed, 49 per cent. slightly wounded, 37 per cent. severely wounded, 10 per cent. remained with command for treatment.

The severe wounds among these were distributed over the target areas of the body as follows:—

SEVERELY WOUNDED, 23,054.	Number.	Percentage.
Head and face, . . . . .	2,569	11.14
Throat, . . . . .	514	2.23
Chest, . . . . .	2,254	9.77
Back, . . . . .	793	3.44
Abdomen, . . . . .	1,890	8.20
Side, . . . . .	988	4.28
Upper extremities, . . . . .	5,628	24.41
Lower extremities, . . . . .	8,418	36.52
	23,054	99.90

From this table we find that more than seventy per cent. of the wounds were inflicted in the extremities. If we now go back to the character of wounds to be expected in future wars we find that it is especially true that the humane features of the wounds from the small-bore gun are observed in the soft parts and joint ends of bones. Those of the soft parts need not detain us since they will seldom be classed among the severe wounds.

With reference to the bony lesion of the extremities we may divide them into two classes, viz., those of the epiphysis and those of the diaphysis.

*Epiphysis.* — The old conoidal leaden bullet of large calibre invariably produced comminution and splintering in the joint ends of bone, and the injuries they were wont to cause in these anatomical parts were attended with marked shock, and they were always serious at best.

On the other hand, the destructive effects of the jacketed steel bullet in the spongy ends of bone, except at relatively short ranges, are not attended with comminution or fissuring, and the element of shock may be entirely absent or faintly marked. Instead of the enormous destruction of tissues noted by the old leaden bullet, we more often find guttering, or a complete perforation of the bone without fracture, and these appearances are specially noted at ranges between three and fifteen hundred yards.

*Diaphysis.* — Gun-shot injuries of the shafts of the long bones by the old leaden bullet of large calibre were characterized by extensive comminution; isolated fragments free from periosteal attachments; numerous fissures. On the contrary, the jacketed bullet causes less comminution; the smaller fragments are generally bound to the main fragments by periosteal attachments; the fissures are usually subperiosteal, and the bony lesions take more of the nature of perforations, such as are commonly seen in the joint ends. Complete perforations without fracture are not infrequently seen in the results of the experiments on cadavers and lower animals, and Dr. Arnold of the Navy, while giving his recent experiences in China in the annual report of his surgeon general for 1895, details a complete perforation of both femora in the same individual, without fracture, by a steel-armored bullet from a new Mauser. Taking all these facts in consideration I believe it may be stated without much fear of contradiction that the gun-shot injuries of the extremities, which have formed such a large percentage of the wounded, will be less severe in the wars of the future, and that the proportion of men in this class who will require transportation to the rear will be less than heretofore, and that, therefore, an increase in the number of porters from this source need not be apprehended.

Our present knowledge of treating wounds will operate materially to lessen the burden of the relief corps. In former wars sepsis was the rule in all wounds; the constant attention and frequent dressings entailed a vast amount of work on the medical department of the various hospitals. To-day, by observing aseptic and antiseptic methods, it is the exception to witness suppuration in wounds; it is seldom that a wound requires to be dressed oftener than once per week; whereas it was necessary in the pre-aseptic era to change the dressings daily, and often twice per day. The saving in time, material and labor is at once apparent when we contrast the old methods with the new.



## (2)

## THE DUTIES OF A MEDICAL OFFICER IN THE FIELD.

By Capt. Paul Clendenin, Assistant Surgeon, United States Army.

The subject which has been assigned for your consideration this afternoon is a broad one and takes us, to some extent, onto contested ground. A volume could be written on the duties of a surgeon in the field service, and another could be filled and more than filled with a discussion of the part which the medical department will play in time of actual hostilities. The conditions of warfare with modern weapons and with recently adopted tactics are to a considerable extent conjectural. Especially is this so as regards the care of the wounded during and after the conflict. The tactical arrangement of troops is the outgrowth of experience in war, so the disposition of forces we have at our command to care for the wounded will be determined by the exigencies that arise when the clash of arms comes. Every new tactical formation is developed in actual war. A scheme is adopted, and when put in practice in a campaign its strong and its weak points are manifest, and sooner or later the weaknesses are eliminated and the parts proven to be good are elaborated and amplified.

The medical department of the army has an arrangement of its available men and material which is theoretically excellent. We may find, however, when it is put to the test and meets the new conditions of long range, flat trajectory rifles and rapid-firing machine guns, open troops, and attacks made by successive rushes of comparatively small bodies of men, that very material alteration will be found expedient and necessary. We must all realize, however, that some organized plan of work must be laid down in order that various individuals of the medical service may act in harmony with each other.

In early days the care of the wounded was attended to by men working independently of each other, without system or co-operation, and the result was much misdirected effort, excellent in itself, but falling far short of requirements.

The advantages of discipline and organization and intelligent preparation to meet emergencies are nowhere more apparent than in our branch of the service. Never is it more essential that every one should do his best, and that all should work together to avoid repetition and wasted energy, than in the speedy relief of wounded men in battle. For this reason and to this end the medical department has devised and adopted a drill for litter bearers, instructions for rendering first aid to the wounded, and an arrangement of dressing stations, ambulance

stations and field hospitals to ensure early and efficient care of the men who fall in battle and their speedy removal to a place of safety.

But before the supreme hour of the conflict come the preparation for the march, the march with troops, and the care of the sick and injured on the march and in camp. Let us go back and consider these important duties.

*Preparation.* — We presuppose the medical officer to have at his command an ambulance and wagon, with their animals, camp equipage, tentage, etc., and hospital stores and supplies. He receives an order to accompany troops into the field. If he has had the control of all this property and has kept up his periodical inspections of the various items, he knows that his animals are in good condition, the ambulance in good repair and fully equipped, the field medicine and surgical chests and reserved chests filled, the mess and food chests complete, the field furniture and bedding properly packed, and the tentage in good repair and properly rolled, and last, but not least, that the tent pins are with the tents. If, however, he receives the property for the first time, as is often the case, the time is well spent in a thorough inspection of all these articles before taking up the march. Nothing is more exasperating than to find your equipage incomplete when separated from your base of supplies, as, for example, when you start in to pitch a tent, after a hard day's march, and find you have just enough pins to hold the tent up till the first gust of wind can blow it down.

It is an excellent idea for the surgeon to superintend in person the packing of the ambulance and wagon. The ambulance should contain only the medicine and surgical chests and such bedding and articles as may be required in case of an accident en route. Do not make the mistake of permitting a lot of odds and ends to be thrown into it because it looks empty and convenient. It is intended to be empty until it is filled with sick men. In hot weather a block of ice wrapped in a piece of blanket is an excellent addition, as men are likely to be overcome by the heat in marching, especially the first day or two, before they become accustomed to it. In packing the wagon see that ax and hatchet and shovel or spade are handy and not forgotten. It is the part of the quartermaster to supply the equipage, but it is better to see that it is all on hand than to blame him when you find something has been forgotten. The wagon will carry the tents, field furniture, bedding, reserve chest, cooking outfit, forage for the animals, rations for the men and personal belongings of the surgeon and his detachment (these latter should be as little as possible, as you all know who have been on hunting or fishing expeditions). Every surgeon has some things which he uses a good deal of, and to suit his personal preferences he either puts an abundance of these in the reserve chest, or if that has definite contents he packs a little box with these things. Personally I always

see that I have plenty of calomel along, as I have found that most excellent for the chafing so often seen both in foot and mounted troops in hot weather.

On the march the position of the ambulance is immediately in rear of the column and in front of the wagon train. The hospital steward is mounted and should always stay by the ambulance. The surgeon is attended by a mounted orderly, and it is well for him to ride near the ambulance the first day or two as his services are most likely to be required there. With a large command this should be his invariable rule, but with a small command there is no reason why he should not ride where he pleases; his uniform and the brassard on his arm will easily identify him if he is needed.

On arrival at the first camping place, unless it is a practice or exhibition march, or unless the number and conditions of the sick require it, of the camp is to be occupied for some time, it is not a good idea to pitch the hospital tent. The men are tired and have not become accustomed to the new routine, and everything generally is in confusion and friction is the rule. For my own part I do not like to do unnecessary work, and I do not like to call on my men for it either. If, however, it is decided to pitch the tents, pitch the cook tent first and set the cook at work, and pitch your own tent last. If the camp is laid out tactically, your diagrams will show you where and how to plan your tents.

If the command is large you will require more than one hospital tent and they should be placed end on, close together. At either end a fly projecting its full extent beyond the line of tents affords a most grateful shade in hot weather.

If the camp be permanent or the weather threatening the tents should be ditched with a shallow trench all around, and carried off some distance to the lowest point. The earth removed should be piled on the lowest part of the tent wall provided for this purpose. For the storage and squad tent there is no better form than the conical wall tent or Sibley tent, so named for the officer who invented it. It is a modification of the Sioux tepee, and has a central part resting on an iron tripod, within the legs of which can be placed a small conical stove with its pipe carried up beside the pole.

In the field, sick-call is usually sounded in the afternoon, shortly after arrival in camp, instead of in the morning, as in garrison. The surgeon will make a sanitary inspection of the camp each day. This is especially necessary in a permanent camp, to see that it is properly policed, and that the sinks are properly placed and kept in good order; usually by covering the excrement with the earth removed in digging the sinks. He will promptly report any inattention in these matters to the commanding officer, with his suggestions and recommendations.



An important duty is the inspection of the various messes, remembering the old saying that improperly cooked beans have killed more soldiers than have bullets. The change of mode of life and diet and water incident to field service is very fertile of digestive troubles, and these, with blistered feet and saddle boils, will occupy a good deal of the surgeon's time in his first field service.

Upon breaking camp in the morning the surgeon will see that everything is properly rolled or folded and stowed away in the wagon. If he instructs his men well and assigns to every one his work he need spend but little time on this, for it is remarkable how soon well disciplined men can break camp, and soon he can devote all his attention to the more important duty of deciding which of his patients shall ride in the ambulance, and which are able to walk or ride their horses, and in this he will require all his judgment, for there are many men who are ready to impose on the credulous doctor if thereby they can shirk duty; and, too, there are others who from pride wish to march with their comrades, when by a little rest and care they can be saved from breaking down utterly.

A few days' marching also will bring out the weaklings and show their utter unfitness for service. These had best be bundled off at once, by rail or steamboat, and sent home if possible, for they will only be a burden, and a useless one, to a marching column.

In the movement of large bodies of troops the camping places are often selected in advance and the camp all laid out before the arrival of the column, in which case you have but to occupy your place; but in smaller commands your commanding officer will ask you to aid him in selecting a proper site for the camp. The old western adage for a commanding officer was to select a place where there was wood, water and grass. The surgeon should look to it that the water is good and that the site is easily drained. One of the essential points to be looked after is the matter of water. Suggest to the commanding officer, if he does not think of it himself, to send on a guard to be placed over the water before the column halts. If the water is in pools, see that enough for cooking and drinking purposes is taken out before the animals are watered, and that the animals be not allowed to wade into it and stir it up, otherwise the last comers will refuse to drink, for animals — horses and mules — are as fastidious as the average human being, and if your animals will not drink they may give out, and the success of many an expedition has been frustrated by a failure of the transportation. To be sure you are not a veterinary surgeon, but it is worth your while to give an eye to everything that will help on the campaign. If the water is a running stream, see that the drinking and cooking water is taken out above where the animals are watered, and that the men bathe and wash their clothes still farther down the stream.

Encourage your soldiers to bathe the feet after a day's march. On the frontier you will see nearly a whole company of experienced infantrymen, after a day's march, strung out along the bank of a stream with their feet in the water. Encourage also the use of fresh stockings each day and a liberal use of the "futzpulver" of the Prussian army if the feet are at all chafed or tender. Inquire into whether or not the men sleep comfortably; see that they have straw or twigs of trees under them to keep them off the ground. This is especially essential if there is any dampness, or if you are in a malarial district or camping on made ground, — a city. See also that they shake and air their blankets daily and dry them before the fire if damp.

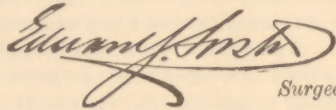
These may seem to you trifles, but then life is made up of little things. "Do not despise the day of small affairs." If an ounce of prevention is generally worth a pound of cure, on the march it is worth a ton. Encourage the men to come to you at once with all their ailments and attend to them well, so as to avoid, if possible, their coming down sick, for nothing is a greater drag on a marching column, especially if it is marching light and trying to strike an effective blow, than a lot of sick men. For this reason try to keep the men well, and then, if you can, send those seriously sick somewhere to be cared for. They will be benefited thereby and your column will be relieved.

Remember also that in addition to being a medical officer you are an officer, and as much interested in the success of the expedition as any other officer, and be ready and willing to do all that you can to further such success. Keep always before your eyes the object of war, which is to crush the enemy, and be ready to sacrifice yourself and your ideas to that end. You cannot run a field hospital as you do a city hospital. You cannot treat sick soldiers as you can your city patients. The successful military surgeon is the man who is full of expedients and who can bend circumstances to suit his needs.

In this paper I have spoken as of a comparatively small command, with but one surgeon and one ambulance. With a large command there will simply be more surgeons and more ambulances, and the different duties referred to will be divided up instead of one attending to them all. I have also considered the march as though it were through an unsettled region, where one must rely on what has been taken along or can be found anywhere.

In case troops are called out to quell riots in cities the conditions are somewhat changed. Drug stores are convenient if one has forgotten something. Shops are at hand where delicacies for the sick can be purchased. Houses and halls and churches can be requisitioned for shelter for the sick and injured. City hospitals stand ready to receive those seriously injured and to perform the greater operations at a moment's notice when such are required.

It was my good fortune to be ordered to duty with the first troops sent to Chicago in July, 1894, during the strike riots there. The troops were gathered from north, east and west. It was mid-summer, and they were camped on the lake front, on made ground. Their food was the field ration and at first it contained considerable canned corned beef. The combination of all these circumstances resulted in a very great deal of camp diarrhœa and not a few cases of typhoid fever. All the surgery we had to do was attending to some very trivial accidents. When an ammunition chest blew up and killed several men and horses and injured a number of men, one of our ambulances was immediately sent to the scene, but long before it arrived there the ambulances of the city hospital had come and taken off the injured men. In our field hospital we cared only for the lighter cases of sickness; the graver ones were sent to the hospital at Fort Sheridan by rail. When the strike was over the troops were marched out to Fort Sheridan and retained for a time positively to see if everything were really over, when they were marched to eastern Illinois for some field manœuvres. During this march a number of the men succumbed to the heat, and the digestive troubles before referred to, due to the change of climate, food and water, still continued. From my experience I should be prepared in future campaigns of this sort for diarrhœa and heat-stroke more than surgery, and in preparing for service of this kind should lay aside for the time my books on antiseptics and asepsis and take up the study of dietetics and cookery.



*Surgeon General.*





